developing the exposed photosensitive resin;

heat-treating the developed photosensitive resin;

forming a reflecting film on the heat-treated photosensitive resin so that the reflecting film is in electrical communication with a switching element through said contact hole;

wherein a reflecting electrode comprising the reflecting film is formed in the first region and the reflecting electrode is connected to wiring via said contact hole formed in the second region; and

wherein flat parts before heat treatment exist in the first region, a concave portion is formed by a portion surrounded with the flat parts, or a top of a convex portion is formed by the flat parts, a plurality of the concave and convex portions are formed in the first region, and each of the concave and convex portions is formed in a circular or polygonal shape.

21. (New) The method of claim 1, wherein the photosensitive resin comprises a positive photosensitive resin, and the method further comprises removing the photosensitive resin when it is left in the second region after the developing.

REMARKS

This is in response to the Office Action dated July 12, 2001. Claims 2 and 4-7 have been canceled. New claims 11-21 have been added. Thus, claims 1, 3, and 8-21 are now pending. Attached hereto is a marked-up version of the changes made to the claims

by the current amendment. The attached page/s is/are captioned "**Version With Markings To Show Changes Made**."

In paragraph 1 of the Office Action, the drawings stand objected to. Proposed drawing changes are attached hereto, in order to label Figures 22-24 as "prior art."

Claim 1 stands rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Komatsubara. This §102(b) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires, *inter alia*, forming asperities in a first region of the applied photosensitive resin film which do not extend all the way through the photosensitive resin by exposing at least part of the first region with various integrals of exposure amounts so that the photosensitive resin in the first region is left in respective different film thicknesses, and forming in a second region of the applied photosensitive resin film a contact hole by exposing at least part of the second region with an integral of exposure amount different than the exposures in the first region. For example, see Figures 1-5 of the instant application, where different masks 19 and 20 are utilized to form contact holes 30 and asperities 33, respectively, using different amounts of exposure. The instant application explains that this enables a single resin layer to be utilized, and that the use of photolithography to form both the asperities and the contact hole(s) enables the process to be carried out in a much more efficient and cost effective manner. These aspects of claim 1 simply are not found or suggested in Komatsubara.

In contrast to claim 1, Komatsubara fails to disclose or suggest using different amounts of exposure to form the asperities in the first region and the contact hole(s) in

the second region. Instead, Komatsubara's asperities/contact hole are not formed by changing exposure amounts as required by claim 1, but instead are formed by changing etching conditions. Komatsubara is disadvantageous in this regard, and is unrelated to the invention of claim 1.

The invention of claim 1 (where the asperities and contact hole are formed by controlling exposure amounts and using different such exposure amounts) is thus advantageous relative to Komatsubara in that developing can be done after both exposures (e.g., one dipping step in soluation) so that swelling of the resin is reduced and reliability enhanced. More accurate manuracturing is also enabled.

Claims 14-18 require first and second different photomasks used to form the asperities in the first region and the contact hole in the second region (e.g., see Fig. 2 of the instant application which illustrates different masks 19 and 20). Komatsubara fails to disclose or suggest the use of first and second different photomasks as required by these clams. Accordingly, Komatsubara cannot anticipate or render obvious these claims. The art of record fails to disclose or suggest this, either taken alone or in any reasonable combination.

New claim 12 requires the use of a single photomask to form both the asperities in a first region and the contact holes in a second region. The photomask required by new claim 12 must have light transmitting portions, light intercepting portions, and semi-light transmitting portions. For example, see Figure 7 of the instant application, where photomask 35 includes light transmitting portions 17c, light intercepting portions 18c, and semi-light transmitting portions 29. Again, photolithography must be used in new

claim 12 to form both the asperities and the contact holes using the same mask. Komatsubara clearly fails to disclose or suggest the claimed photomask, and also fails to disclose or suggest the use of photolithography to form both the asperities and the contact holes.

Because Komatsubara does not use photolithography to form asperities, one would not have made the alleged combination with Chang. This is because the only photolithography used by Komatsubara is for forming the contact hole, and the multi-exposure shift method of Chang clearly would not be needed or useful in this regard. Accordingly, the §103(a) combination of Komatsubara and Chang set forth in the Office Action lacks merit. It is also noted that Chang is not prior art to the instant application, because it has a filing date after the claimed priority dates of the instant application (if the Examiner desires a certified English translation, applicant will be glad to provide one).

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn and the application passed to issue. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

1. (Amended) A method of manufacturing a liquid crystal display apparatus having, on one of a pair of substrates disposed so as to be opposed with a liquid crystal layer therebetween, a reflecting [means] film for reflecting incident light from the other substrate, comprising [the steps of]:

applying a photosensitive resin on said one of the substrates;

[forming] in order to form asperities in a first region of the applied photosensitive resin film which do not extend all the way through the photosensitive resin and to form a contact hole in a second region of the applied photosensitive resin film, [by] exposing at least part of the first region with various integrals of exposure amounts so that the photosensitive resin in the first region is left in respective different film thicknesses [, and forming in a second region of the applied photosensitive resin film a contact hole concave portion so that the photosensitive resin in the second region is left in a thickness smaller than those of the first region by] and exposing at least part of the second region with an integral of exposure amount different from those for the first region;

developing the exposed photosensitive resin;

heat-treating the developed photosensitive resin; and

forming a reflecting film on the heat-treated photosensitive resin so that the reflecting film is in electrical communication with a switching element through said contact hole.

3. (Amended) The method of manufacturing a liquid crystal display apparatus of claim 1, wherein a terminal portion is formed in an outside display region on one of the substrates and [that] the second region of the photosensitive resin is formed at least partially in the terminal portion.

8. (Amended) The method of manufacturing a liquid crystal display apparatus of claim 19 [6], wherein uniform and low-illuminance exposure is performed [at the step of] exposing the photosensitive resin using one of the first photomask and the second photomask, while uniform and high-illuminance exposure is performed at the step of exposing the photosensitive resin using the other of the first photomask and the second photomask.

Please add the following new claims:

11. (New) A method of making a reflective liquid crystal display, the method comprising:

providing a substrate;

applying a photosensitive resin on the substrate;

using a single photomask to form both a) asperities in a first region of the photosensitive resin which do not extend all the way through the photosensitive resin, and

b) contact holes in a second region of the photosensitive resin, said contact holes exending all the way through the photosensitive resin;

providing said photomask with light transmitting portions, light intercepting portions, and semi-light transmitting portions, so that different amounts of light exposure are utilized using said photomask in order to form at least one of said asperities and said contact holes;

developing the exposed photosensitive resin;

heat treating the developed photosensitive resin; and

forming a reflective electrode on the heat treated photosensitive resin so that said reflective electrode is in electrical communication with a switching element through at least one of said contact holes.

12. (New) The method of claim 11, wherein the photosensitive resin is negative, and said exposure includes exposing the photosensitive resin using said photomask when the light transmitting portions and semi-light transmitting portions of the mask are located over said first region of said photosensitive resin, and the light intercepting portions of said photomask are located over said second region of said photosensitive resin.

13. (New) The method of claim 11, wherein the photosensitive resin is positive, and said exposure includes exposing the photosensitive resin using said photomask when said light intercepting portions and said semi-light transmitting portions of said

photomask are located over said first region of said photosensitive resin, and said light transmitting portion of said photomask is located over said second region of said photosensitive resin.

14. (New) A method of making a reflective liquid crystal display, the method comprising:

applying a photosensitive resin to a substrate;

forming asperities which do not extend all the way through the resin in a first region of the photosensitive resin by using a first photomask and exposing at least part of the first region using said first photomask;

forming contact holes in a second region of the photosensitive resin using a second photomask different than the first photomask, and exposing at least part of the second region using said second photomask;

developing the exposed photosensitive resin;

heat treating the developed photosensitive resin; and

forming a reflective electrode on the heat treated photosensitive resin over asperities so that said reflective electrode is in communication with at least one switching element through at least one of the contact holes.

15. (New) The method of claim 14, wherein exposure amounts using the first and second photomasks are the same.

16. (New) The method of claim 14, wherein uniform and low-illuminance exposure is performed so as to expose the photosensitive resin using the first photomask, while uniformed and higher illuminance exposure is performed so as to expose the photosensitive resin using the second photomask.

17. (New) The method of claim 14, wherein the photosensitive resin comprises a positive photosensitive resin, and the method further comprises removing the photosensitive resin when it is left in the second region after the developing.

18. (New) The method of claim 14, wherein uniform and low-illuminance exposure is performed so as to expose the photosensitive resin using the second photomask, while uniform and higher illuminance exposure is performed so as to expose the photosensitive resin using the first photomask.

19. (New) A method of manufacturing a liquid crystal display apparatus having, on one of a pair of substrates disposed so as to be opposed with a liquid crystal layer therebetween, a reflecting film for reflecting incident light from the other substrate, comprising:

applying a photosensitive resin on said one of the substrates;

in order to form asperities in a first region of the applied photosensitive resin film which do not extend all the way through the photosensitive resin and to form a contact hole in a second region of the applied photosensitive resin film, exposing at least part of

the first region with various integrals of exposure amounts using a first photomask so that the photosensitive resin in the first region is left in respective different film thicknesses, and exposing at least part of the second region with an integral of exposure amount different from those for the first region using a second photomask;

developing the exposed photosensitive resin;

heat-treating the developed photosensitive resin; and

forming a reflecting film on the heat-treated photosensitive resin so that the reflecting film is in electrical communication with a switching element through said contact hole.

20. (New) A method of manufacturing a liquid crystal display apparatus having, on one of a pair of substrates disposed so as to be opposed with a liquid crystal layer therebetween, a reflecting film for reflecting incident light from the other substrate, comprising:

applying a photosensitive resin on said one of the substrates;

in order to form asperities in a first region of the applied photosensitive resin film which do not extend all the way through the photosensitive resin and to form a contact hole in a second region of the applied photosensitive resin film, exposing at least part of the first region with various integrals of exposure amounts so that the photosensitive resin in the first region is left in respective different film thicknesses, and exposing at least part of the second region with an integral of exposure amount different from those for the first region;

developing the exposed photosensitive resin;

heat-treating the developed photosensitive resin;

forming a reflecting film on the heat-treated photosensitive resin so that the reflecting film is in electrical communication with a switching element through said contact hole;

wherein a reflecting electrode comprising the reflecting film is formed in the first region and the reflecting electrode is connected to wiring via said contact hole formed in the second region; and

wherein flat parts before heat treatment exist in the first region, a concave portion is formed by a portion surrounded with the flat parts, or a top of a convex portion is formed by the flat parts, a plurality of the concave and convex portions are formed in the first region, and each of the concave and convex portions is formed in a circular or polygonal shape.

21. (New) The method of claim 1, wherein the photosensitive resin comprises a positive photosensitive resin, and the method further comprises removing the photosensitive resin when it is left in the second region after the developing.